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**A mismatch in the late 1990s between the qualifications needed for key general officer positions and the backgrounds of available candidates stimulated RAND research and then an extensive U.S. Air Force effort to improve the development of future senior leaders. In the past, most officers were managed within their career fields and were too narrowly specialized. This monograph summarizes the force development initiative's history and related research efforts that (a) identified colonel positions' needs for multiple (paired) occupational skills and set targets for the numbers of officers who should acquire those skills before they are promoted to colonel and (b) illustrated a four-step approach that can create notably more specific developmental targets for officers at grades from lieutenant through colonel within an occupation or career field. The four steps are as follows: (1) identify and prioritize the types of experience, education, and training that should precede each category of job (identify the demand, at least for the jobs in the field grades-major, lieutenant colonel, and colonel), now and in the future; (2) ascertain the backgrounds that officers have accumulated (assess the supply); (3) compare supply with demand (gap analysis); and (4) plan ways to close the gaps. These ideas suggest steps that could improve the efficiency and effectiveness of force development for Air Force officers, the enlisted and civilian forces, and the reserve components.**

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# Advancing the U.S. Air Force's Force-Development Initiative

S. Craig Moore, Marygail K. Brauner

Prepared for the United States Air Force

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# Preface

The Air Force's force-development initiative evolved from research that the RAND Corporation began in the late 1990s, aiming to improve the development of Air Force senior leaders. This monograph summarizes force development's history, recommends ways to advance the initiative, and suggests areas that need senior leaders' attention and decisionmaking. In it we respond to discussions during 2005 with Maj. Gen. Tony Przbyslawski, Commander of the Air Force Personnel Center. In current force-development parlance, we concentrate on the development of "occupational competencies" that can be managed substantially and more definitively using officer assignments, in contrast to "institutional competencies" (such as negotiating, visioning, fostering diversity, listening actively, and demonstrating ethical leadership) that are less job-specific and that the Air Force is working to inculcate largely through education and training.

We wrote the monograph within RAND Project AIR FORCE's Manpower, Personnel, and Training Program under a project named "Methods and Prototypes for Air Force Force Development," which was sponsored by the Air Force Deputy Chief of Staff for Manpower and Personnel. This work's antecedents were projects sponsored by the Air Force General Officer Matters Office (later the Air Force Senior Leader Management Office), the Developing Aerospace Leaders Project Office, and the Air Force Space Command.

This document should be of value across the Air Force manpower and personnel community and perhaps even more to career-field managers and development teams in other functional areas. It aims to help members of the Force Management and Development Council (FMDC) (formerly the Force Development Council) adopt a common vision for the future of occupational force development and to promote consistent advancements within and across their functional areas. We are concerned that the force-development initiative eventually could come to little unless more Air Force leaders engage positively, vigorously, and definitively to advance its implementation.

Other published RAND research in this area includes the development and application of data and methods for targeting the occupational skills needed in the Air Force's senior military and civilian executives (at the level of military general officers and the civilian Senior Executive Service, see Robbert et al., 2004) and improving the utilization and development of Air Force space and missile officers at lower grades (regarding officers from lieutenant through colonel, see Vernez et al., 2006). Additional related forthcoming work will identify the occupational skills needed in the Air Force's colonel workforce and, paralleling the research that addressed space and missile officers, will identify improved career paths for Air Force rated officers (pilots, navigators, and air battle managers) and intelligence officers. Similar RAND research has addressed the backgrounds needed in military and/or civilian executives in the U.S. Army, Navy, and Marine Corps and in the Federal Bureau of Investigation. In addition, RAND has studied the development of Army tactical leaders (see Leonard et al., 2006), the utilization and management of general and flag officers across the Department of Defense (see Harrell et al., 2004), and how to develop joint officers at lower grades (see Thie et al. , 2005).

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# Summary

A mismatch in the late 1990s between the qualifications needed for key general officer positions and the available candidates' backgrounds stimulated an extensive U.S. Air Force effort to improve the development of senior leaders. The Air Force needed to develop cohorts (individuals who enter the force in a year's time) of senior officers—generals and colonels—who have sufficient breadth for their current jobs and for positions they may need to fill in the future. In the past, most officers were managed within their career fields and were too narrowly specialized. The intent of our research was to understand the types of skills (or "competencies") that each officer position really needs and then to set targets for the numbers of those who should acquire those skills over their careers before they are promoted to colonel. The effort evolved into the current force-development initiative, which is managed by the Deputy Chief of Staff for Manpower and Personnel; advised by the FMDC, chaired by the Vice Chief of Staff; and substantially carried out by career-field managers, functional development teams, and the Air Force Personnel Center's officer assignment teams. The initiative concentrates first on the development of officers in grades below colonel. While parallel systems are forming for enlisted and civilian personnel and the reserve components, our monograph addresses the system for officers in the active component.

The force-development system should aim to develop enough officers with specified backgrounds so that multiple qualified candidates will be available for each opening. Beyond the occupational specialties (primary skills) where they substantially "grew up," most general officers ideally would have significant experience in a secondary or paired occupation or skill, preferably with corresponding education or training. For example, a bomber pilot with a paired skill in international political-military affairs would be regarded as properly qualified for nearly twice as many general officer positions as one lacking a paired skill. It usually takes deliberate development for an officer to gain experience outside his or her primary specialty. Subsequent analysis extended the analysis of primary and secondary skills for general officers and formulated targets for paired skills when officers are promoted to colonel—targets that the development teams began using during 2005 to guide the mixes of developmental vectors selected for officers at lower grades in their career fields. For example, at least 5 to 6 percent (but preferably about 12 percent) of new mobility colonels ("rated" officers who grew up as airlift or tanker pilots or navigators) would have secondary skills in planning and programming, and about the same share would have secondary skills in acquisition or financial management (see p. 18). Factors like job sequencing (e.g., some jobs are appropriate first jobs for colonels while others require senior colonels), ill-shaped job pyramids (e.g., some skill pairs are needed for senior jobs only), and the need for selectivity (multiple qualified candidates should be available when openings occur) imply that substantially more officers than positions need paired skills. Flow analysis found that, overall, at least 31 percent, and preferably about 58 percent, of new line colonels should have secondary skills, even though in fiscal year 2002 only 23 percent of about 2,800 line colonel positions needed secondary skills. Naturally, the targeted secondary skills and percentages differ across career fields (see p. 16).

A four-step approach can create notably more-specific developmental targets for officers in grades below general officer within a particular career field: (1) identify and prioritize the types of experience, education, and training that should precede each category of job (identify the demand, at least for the jobs in the field grades—major, lieutenant colonel, and colonel), now and in the future; (2) ascertain the backgrounds that officers have accumulated (assess the supply); (3) compare supply with demand (gap analysis); and (4) plan ways to close the gaps. (See pp. 20–26.) We have demonstrated the approach for space and missile operations officers (the 13S career field) and are using it now with (and for) the "rated" (11X [pilot], 12X [navigator], and 13B [air battle manager]) and intelligence (14N) career fields. When coupled with careful management of officers' assignments and schooling, the approach promises far more complete fulfillment of positions' needs and far greater use of officers' backgrounds than are currently available (see Figure 4, p. 25).

## Key Findings

### Multiple Skills Required

Analysis of both general officer and colonel-level (O-6) positions shows that many positions need pairs of skills—primary and secondary (see pp. 2–3, 6–7, 11). That is largely why the Air Force instituted the FMDC and all the associated procedures, to ensure that enough officers get experience in multiple specialties and to counter the tendency toward overspecialization.

### Assessing Skill Requirements

Systematically identifying (and periodically updating) positions' requirements for both primary and secondary skills is essential. While it may seem daunting at the outset, it has proven feasible to identify such requirements and to get them accepted across the Air Force, as RAND's work addressing the military and civilian executive forces demonstrates, for example. We recommend using expert panels rather than surveys of job incumbents to identify and update most skill requirements, especially for the field grades (see pp. 12, 22).

### Important Implications of Multiple-Skill Requirements

Multiple-skill requirements have extensive ramifications, as found through flow analysis. Even if a minority of positions demands multiple skills, to meet those demands a majority of the officer cohort may need to have multiple skills. The inventory must include many multiskilled officers, in spite of officers' natural desire to stay within their primary specialty in each assignment (see Table 4, p. 16).

### Keeping Officers on the Right Path

The Air Force needs continuing management to ensure that officers, at least in the aggregate, are following the right pathways. In particular,

- The Air Force needs agreed-upon mechanisms for tracking skills, especially to answer the question: How much is enough? This remains an open question, since originally it was believed that two tours were needed in a secondary skill, but since then it has become policy to grant a "developmental [skill] identifier" after just one year of experience (see p. 9). Having just one year's experience in an occupational area, perhaps even early in their careers, probably falls far short of making officers viable candidates for leadership positions in those areas once they become colonels or generals.
- The development system needs to manage career fields so that enough officers have the targeted skill pairs by the time of a cohort's promotion to O-6. However, a paired skill should not be essential for promotion to colonel (see p. 19).

## Next Steps

We recommend that the Air Force make its formal instruction about officer force development (AFI 36-2640) more specific regarding the need for paired skills at senior levels and regarding the need to systematically plan and manage development for far larger numbers of midcareer positions. We believe the FMDC and its members should play important roles in shaping, advocating, coordinating, and monitoring how the functional communities (e.g., operations, intelligence, logistics, personnel, or acquisition) execute their force-development responsibilities.

The force-development community should take the following steps:

- Establish standards for earning paired skills, more demanding than earning developmental identifiers (see p. 9).

- Update and extend the database of backgrounds needed for colonel positions (see p. 12).
- Clarify that earning a paired skill is not essential for promotion to colonel (see p. 19).
- Set development teams on course to create measurable developmental targets for grades below general officer (see pp. 19–27).
- Create and monitor measures tracking the development of officers promoted to each grade, serving in command jobs, attending developmental courses in residence, or holding other key assignments (see pp. 27–28).
- Find ways to use or enhance data systems to (1) consistently register jobs' needs for prior experience, education, and training; (2) track individual officers' accumulating portfolios of experience, education, and training; and (3) help recommend and make assignments whose demands officers meet, that use the officers' backgrounds, that help manage career fields properly, and that match members' preferences insofar as possible (see p. 28–29).
- Improve force planning and management so that career fields' numerical strengths align more consistently with requirements and leave room for deliberate professional development (see p. 29).

Beyond yielding information that the Deputy Chief of Staff for Manpower and Personnel (AF/A1) and the FMDC can use in deciding resource allocations and making system adjustments, these steps should help the wide range of force-development players to develop consistent, efficient, and effective plans and means for improving the development of officers in their career fields. The steps are also likely to provide insights and mechanisms that will be valuable more widely as the Air Force extends and enhances force development to address the enlisted and civilian forces and the reserve components.

# Acknowledgments

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missile operations; Col. John Stankowski for maintenance and logistics; Sherry Medders for public affairs; Patrick Hogan for acquisition, scientists, and engineers; and Glenda Scheiner for financial management. RAND colleagues Michael Polich and Michael Hix reviewed a draft of this document and suggested many improvements.

# Advancing the U.S. Air Force's Force-Development Initiative

## Introduction

The U.S. Air Force has undertaken a very large human resource program. In 1998, Chief of Staff of the Air Force Gen. Michael E. Ryan observed a mismatch between the qualifications of Air Force general officers and some of the jobs they needed to fill. Finding too few candidates with backgrounds appropriate for filling senior warfighting positions and many general officers with backgrounds too specialized to be very useful at higher grades, he launched what has become the force-development initiative.[1] The goal of force development is to systematically "grow" professional competencies (knowledge, skills, and abilities) through deliberate planning and management of officers' experience, education, and training. Over the past few years, force development has begun expanding beyond general officers to include the civilian Senior Executive Service (SES) and planning and management for lower officer grades and individual career fields. Steps toward more-deliberate force development for enlisted, guard and reserve, and other civilian personnel have also begun.

The Air Force's force-development initiative is still taking shape. Some of its goals and objectives need clarification, and decisions are needed so that goals can be achieved as efficiently and effectively as possible. Since 1998, RAND Project AIR FORCE has helped the Air

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[1] More commonly in the Department of Defense, force development means the organization and equipping of units and forces. Here it means the development of human capital.

Force identify the need for more-deliberate force development and establish targets to guide the development of future senior leaders, supporting the force-development initiative through its early years. Later, RAND Corporation assessed and developed methods to improve the finer-grained development and sustainment of officer workforces in specific career fields. From those perspectives, RAND offers this brief monograph as food for corporate thought in the Air Force, intending it principally for senior leaders, including the Air Force Deputy Chief of Staff for Manpower and Personnel (AF/A1) and staff, plus members of the Force Management and Development Council (FMDC) (formerly the Force Development Council), who are charged with guiding force development's implementation.[2] We believe the FMDC should inspire and help lead the initiative, guiding it toward an institutional, strategic perspective that cuts across career fields, ensuring that individual career fields develop force-wide goals consistent with that perspective, and tracking progress toward meeting both cross-cutting and career field–specific goals.

Paralleling the Air Force's initial emphasis, this monograph concentrates on occupational force development for the active component's officer force. It seems worth remembering the late Gen. Robert Dixon's observation as advisor to then–Chief of Staff of the Air Force General Ryan: "Transforming officer development is more important to the Air Force's future than acquiring the F-22 and the Joint Strike Fighter. It will be harder to do, and there's greater risk of failure" (quote from the Senior Leader Kickoff meeting, 1999).

The key difficulty was that most Air Force officers grew mainly within narrow, primary occupational areas, such as fighters, intelligence, or maintenance, and became well-qualified for relatively few senior positions that require those specialized skills. Officers with a paired (or secondary) skill would be viable candidates for many more senior positions. For example, bomber pilots and navigators without a paired skill were best qualified for only about 6 percent of 2005's general officer jobs, but a paired skill in acquisition management would qualify them for another 3 percent of the jobs, a paired skill in international political-military affairs for another 5 percent, a paired skill in planning and programming for another 7 percent, and a paired skill in air power employment for another 15 percent.[3] Positions for colonels exhibit similar requirements, although relatively fewer of them require paired skills. Our research set out to understand the types of skills (or "competencies") that each senior position really requires in order to target how many officers should acquire those skills before they are promoted to colonel.

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[2] U.S. Air Force (2004) describes the force-development program and spells out the FMDC's and others' responsibilities.

This monograph reviews steps that have shaped the force-development initiative, including some missteps that illustrate how easily the initiative can get off track. Then it sketches the targeting of occupational skills—specifically, paired primary and secondary occupations—needed in future senior Air Force general officers and colonels, so far in all except the medical, legal, and chaplain specialties. Then it describes and illustrates an approach for planning much finer-grained development of officers for the field grades—major, lieutenant colonel, and colonel. It closes with recommendations for next steps for the force-development initiative.

## History, Including Some Missteps

The force-development initiative began with a new way of thinking about the occupational competencies required for general officer and SES positions. As early as 1998, the Air Force identified individual general officer (and later SES) positions' needs for occupational competencies, such as fighter, bomber, intelligence, maintenance, planning and programming, aerospace power employment, and information operations. Air Force leaders also identified cross-functional competencies that all senior officers should have, such as management, analysis, and communication skills, although with different degrees of emphasis for different jobs.[4] The occupational requirements fed into an analysis of potential promotion and utilization patterns to help increase the likelihood that more incoming military and civilian executives would have the combinations of skills needed for senior jobs.[5] See Robbert et al. (2004).[6]

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[3] As Robbert et al. (2004) explain, the analysis considers generals qualified for a job if either their primary or, less desirably, their secondary skill matches the job's required primary skill. This would qualify bomber pilots or navigators with a secondary skill in, say, acquisition management for nearly 47 percent of the total general officer positions.

Further steps were taken in 2001, when, with the Corona's endorsement,[7] General Ryan and Secretary of the Air Force Whitten Peters established the Developing Aerospace Leaders (DAL) initiative and the DAL Program Office to plan deliberate ways of developing future leaders. DAL considered the officer, enlisted, active, guard, reserve, and civilian workforces, concentrating first on the officer force. It helped mature the idea of paired occupational competencies, recommended that standards be established for certifying officers' primary and secondary occupational proficiencies, proposed realigning professional military education to help support development (renaming it developmental education), and recommended consolidating existing functional managers' career-field management activities into fewer, larger "core specialty-management" offices.[8] Also, at a Corona conference in

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[4] The "cross-functional competencies" morphed into today's "institutional competencies" that the Air Force is pursuing outside of and across occupational channels.

[5] In this document the terms *needs*, *requirements*, *necessary skills and competencies*, *demand*, and *required background* mean the same thing: the previous experience, education, and training that Air Force members should bring to their jobs. Naturally, different jobs call for different backgrounds.

[6] Although the fact is not documented in that technical report, personnel records for officers promoted to general officer and those who are competitive for promotion to general officer showed that few had developed expertise beyond their own occupational "stovepipes"—i.e., most were narrowly rather than broadly skilled and, consequently, were well prepared for relatively few senior leadership positions.

[7] The Air Force's four-star generals assemble three times each year in Corona meetings.

[8] The DAL Project Office recommended core specialty managers for a dozen areas: air combat operations; air mobility operations; space operations; information warfare operations; command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) operations; special operations; political-military strategy; systems acquisition; logistics operations; maintenance; installation operations; and human resources operations. Lieutenants and captains would develop as traditional specialists (e.g., as fighter pilots, intelligence officers, aircraft maintenance officers, personnel specialists, or acquisi-

2003, Chief of Staff of the Air Force John Jumper and Secretary of the Air Force James Roche opted to simplify and operationalize many of these basic ideas under the force-development moniker and to

- use the existing functional management framework instead of consolidating into core specialties
- establish the FMDC to oversee force-development policies and processes
- create functional development teams to guide the career paths of the officers in their career fields
- reorganize offices at the Air Staff and the Air Force Personnel Center (AFPC) to support the FMDC and development teams.

To help the development teams guide officers into appropriately paired occupations, the Air Force Senior Leader Management Office (AFSLMO) consulted with the functional managers and, in 2003, issued the occupational skill requirements listed in Table 1. Its major headings, such as Logistics, Fighter, and Intelligence, name primary occupations where leading officers should have spent the bulk of their careers, and the subordinate lists name the occupations or paired skills where they should develop a secondary competency. A leader with a primary background in space might have a paired skill in acquisition, communications, or aerospace power employment, for example.

The next step was to target rough numbers of new graduates per year from intermediate developmental education (for majors) who

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tion specialists); majors and lieutenant colonels would develop as "core specialists" (leading or managing the integration of multiple specialties' contributions within one of the 12 core areas); and some officers would develop further as "aerospace specialists" (broadening into one of 14 deliberately paired application areas: joint operations, aerospace operations, air combat, air mobility, space, information warfare, C4ISR, plans and programs, political-military strategy, acquisition, logistics and maintenance, support operations, institutional sustainment, and education). Enough colonels and generals were to become aerospace specialists to create an adequate "bench" from which to fill senior jobs for operations, information, force support, and materiel "transformational leaders" and ultimately for the most senior jobs for aerospace employment, aerospace component commanders, joint employment, and joint leadership. During the DAL period, the family of nonoccupational competencies, earlier labeled "cross-cutting" and today called "institutional," were called "universal" and then "enduring" competencies.

## Table 1
## AFSLMO-Issued Skill Requirements

| Primary Occupation | Paired Secondary Occupations |
|---|---|
| Fighter | Air power employment<br>Political-military<br>Logistics<br>Plans and programs<br>Acquisition<br>Information operations<br>Space<br>Education and training |
| Bomber | Air power employment<br>Acquisition<br>Space<br>Political-military<br>Logistics<br>Plans and programs<br>Information operations<br>Education and training |
| C2ISR-rated[a] | Air power employment<br>Information operations<br>Space<br>Logistics<br>Plans and programs<br>Acquisition<br>Political-military<br>Education and training |
| Mobility (tanker and/or airlift) | Air power employment<br>Mobility operations<br>Acquisition<br>Space<br>Logistics<br>Plans and programs<br>Political-military<br>Information operations<br>Education and training |
| Special operations | Air power employment<br>Space<br>Plans and programs<br>Logistics<br>Acquisition<br>Political-military<br>Information operations<br>Education and training |
| Space | Acquisition<br>Communications<br>Aerospace power employment<br>Intelligence<br>Plans and programs<br>Information operations<br>Political-military<br>Education and training |

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**Table 1—Continued**

| Primary Occupation | Paired Secondary Occupations |
|---|---|
| Intelligence | Political-military<br>Information operations<br>Aerospace power employment<br>Space<br>Plans and programs<br>Personnel<br>Education and training |
| Maintenance | Logistics<br>Financial management<br>Aerospace power employment<br>Plans and programs<br>Acquisition<br>Political-military<br>Space<br>Education and training |
| Logistics | Maintenance<br>Contracting<br>Financial management<br>Aerospace power employment<br>Plans and programs<br>Political-military<br>Acquisition<br>Education and training |
| Communications and information systems | Information operations<br>Intelligence<br>Plans and programs<br>Aerospace power employment<br>Space<br>Education and training |
|  | C2ISR |
| Acquisition management | Maintenance<br>Space<br>Information operations<br>Aerospace power employment<br>Plans and programs<br>Political-military<br>Education and training |
| Other occupations | Information operations<br>Space<br>Acquisition<br>Aerospace power employment<br>Political-military<br>Plans and programs<br>Mobility operations<br>Financial management<br>Personnel and manpower<br>Intelligence<br>Education and training |

[a] Rated officers hold aeronautical ratings as pilots, navigators (weapon system officers), or air battle managers. Rated occupations in this table include fighter; bomber; C2ISR-rated; mobility; and special operations.

**RAND** *MG545-TABLE1 (cont.)*

should go into two-year developmental assignments and gain experience in specific paired occupations. AFSLMO used historical continuation rates and calculated backward to the lower grades from its targeted mix of occupational pairings for incoming general officers.[9] Some results proved unrealistic—e.g., more bomber specialists were targeted for outplacement into developmental assignments than were graduating from intermediate developmental education. At the same time, development teams were to identify and devote positions from their own career fields to the development of officers from different career fields that could change from one assigned officer to the next. Because some numerical targets were unrealistic and because positions that previously were filled by experienced, trained, productive members of their own career fields were to be devoted instead to novices from other career fields (and in indefinite numbers to be negotiated with multiple other career fields' development teams), it is understandable that some development teams balked, the program of developmental assignments was deferred, and AFSLMO's developmental targets hardly influenced the initial vectors that the development teams gave their officers.[10]

Nevertheless, anticipating that development teams eventually would guide officers into targeted skill pairings, AFPC foresaw six "trigger points" when development teams could issue vectors that would grow enough officers with the targeted skill pairings by the time each cohort became eligible for promotion to colonel:

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[9] AFSLMO tried to minimize specifics and allow flexibility, recognizing that any targeted mix (derived using the methods in Robbert et al., 2004) is not unique and that it is unnecessary and even inappropriate to exert great effort to hit precise numerical targets. Coming close to approximate targets is good enough because (1) excellent matches between executive jobs' requirements and future candidates' qualifications can be achieved in numerous ways (there is no unique "best" answer), and (2) under the Air Force's system of promoting the "best qualified whole persons" rather than meeting quotas in different career fields, no one can be certain that a targeted mix of individuals will actually be promoted to general officer. Even a "perfectly configured" pool of contenders (colonels competitive for promotion to general officer) would not yield perfectly configured cohorts of new general officers. Moreover, targets inevitably will change over time.

[10] Development teams issue *vectors* (guidelines for career development) to officers in their career fields in order to guide their professional development. At first, vectors designated mainly organizational targets such as "major command," "joint" or "Air Staff" and were intended to influence officers' next assignment, but the force-development initiative intended the vectors to name paired occupations/skills in which officers should develop secondary competency over the longer term, not necessarily in their very next assignments.

- selection to major
- selection for intermediate developmental education
- selection to lieutenant colonel
- selection for senior developmental education (for lieutenant colonels)
- selection for command
- commander-designated review.

AFPC also developed and fielded data and software ("the DeHaan tool") that the development teams can use as they review personnel records and choose appropriate vectors for an individual's career. The system can track and display the accumulating counts of different vectors and compare them with any quantitative, career field–wide targets.

From their assignment histories, AFPC ascertained how many officers already had at least 12 months' experience in each paired skill and, hence, might be credited ("grandfathered") with the corresponding developmental identifier (presumably marking an officer's progress toward a secondary skill). Note that the 12-month threshold is much shorter than AFSLMO's initial expectation that a paired skill would be earned through at least two tours (much longer than 12 months) in that area. In contrast to both the 12-month and two-tour criteria, DAL leaders strongly favored the certification of occupational competencies using performance-based criteria. *The force-development community still needs to establish standards for earning paired skills, recognizing that paired skills are regarded as critical qualifications for many colonel and general positions, where preparation well beyond a year's experience is likely to be needed, especially if the experience came far earlier in officers' careers.*

Finally, AFPC developed displays to help career-field managers and development teams understand the "health" of their career fields. For example, analysis of a single career field would show (1) the lengthof-experience profile, plus each grade's authorized and assigned personnel; (2) the fields in which members have secondary or paired skills; (3) how various factors have influenced promotion rates; and (4) promotion rates compared with those for the force as a whole. However, these assessments lacked requirements-based targets for paired skills and other qualifications that are needed in order to understand how officers should be moving through their career fields.

The Air Force has begun taking a requirements-based approach to force development, aiming to ensure that enough officers gain the right kinds of skills in time to perform the jobs at colonel and general officer level, but the Air Force is not yet systematically or comprehensively planning and managing the development of officers to perform the jobs at the middle levels within individual career fields. The next three sections describe how the targets were derived for senior leaders' skill pairings, outline a complementary approach that can guide the development of mid-level officers in the various career fields, and recommend steps the Air Force can take toward more complete implementation.

## Developing Future Senior Leaders (General Officers and Colonels)

An important part of the force-development initiative is the establishment of inflow goals, which identify the combinations of skills needed in the force that will fill senior positions. These inflow goals help development teams, career-field managers, and AFPC grow enough officers with the right combinations of skills to fill the senior jobs.

The methods for analyzing general officer and SES flows and targeting inflows at that level are documented in Robbert et al., 2004, as already noted. Subsequent efforts focused on developing inflow goals for new colonels, establishing more immediate development targets for officers through lower grades (from lieutenant through lieutenant colonel), when the development teams, career-field managers, and AFPC directly affect officers' development. A part of this effort was broadened to include civilian GS-15 jobs, the source of most new SES members. AFSLMO, assisted by RAND, took a three-step approach:

1. Identify the skills needed to fill colonel positions.
2. Develop a flow-analysis model to help translate job requirements into goals for the annual inflow of new colonels.
3. Use analytic results to target skill pairings.

### Identifying the Skills Needed to Fill Colonel Positions

In 2002, panels of functional experts had identified the primary and secondary occupations needed for each of about 2,800 of fiscal year 2002's colonel jobs, excluding only the medical, legal, and chaplain career fields.[11] Analysis of the data found that, collectively, the specifications were relatively flexible about the primary and secondary skills required for colonel positions:

- About 20 percent of the colonel jobs could accept officers from any primary career field, and another 40 percent were open to more than one career field.
- Requirements for paired skills were even more flexible. About 77 percent of the jobs were judged to need no secondary occupation at all, and about a third of the others could accept more than one secondary occupation.
- Many requirements did not match the development teams' career fields. Some were broader—e.g., any rated specialty, any operations specialty, and either acquisition or logistics. And some were narrower—e.g., fighter, bomber, missile, and satellite command and control.
- Authorized specialties (Air Force specialty codes) often were too restrictive—e.g., only about 12 percent of the 126 jobs authorized for fighter pilots (11F) could accept only fighter pilots, and only about 22 percent of the 195 jobs authorized for acquisition managers (63A) could accept only acquisition managers.

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[11] Note that functional managers, major commands, and AFSLMO reviewed and refined the expert panels' results. Moreover, there is unpublished RAND research by S. Craig Moore and Brent E. Thomas on targeting the occupational skill pairings needed in new Air Force colonels.

On a nearly emergency basis, AFPC aggregated some of these requirements and fair-shared others to produce interim skill-pairing targets for fiscal year 2005's summer meetings of the development teams. The process occasionally yielded some odd pairings—e.g., when a less-specific need parsed into a requirement for civil engineers with a paired skill in manpower and personnel. Most development teams never received those targets, and only one or two used them. The summer meetings concentrated instead on recommending which officers should attend schools.

In parallel with the analysis of fiscal year 2002 data, AFSLMO launched an effort to survey colonels about the backgrounds needed for their jobs; update the primary and secondary skill requirements; address additional requirements for experience, education, and training; and extend the scope to cover GS-15 positions. AFSLMO distributed the survey in June 2005, but only about 40 percent of recipients responded. *If its results are to become useful, many more survey responses must be obtained.* Then, functional experts would need to review the results and fill in all missing data.

Development planning needs a full picture of the range and mix of requirements anticipated for the future. Our experience with this and other large-scale efforts to ascertain job-specific competency requirements suggests that *panels of subject-matter experts rather than surveys of incumbents offer a more manageable and reliable approach.*

### Lessons from a New Flow-Analysis Model

RAND and AFSLMO analysts developed a new flow-analysis model to help translate job requirements into goals for the annual inflow of new colonels. The model showed that, although many colonel jobs have a fair amount of flexibility in terms of the primary and secondary skills they require, the mix of incoming colonels and the paths they must follow to fill those jobs are much less flexible. There are several reasons:

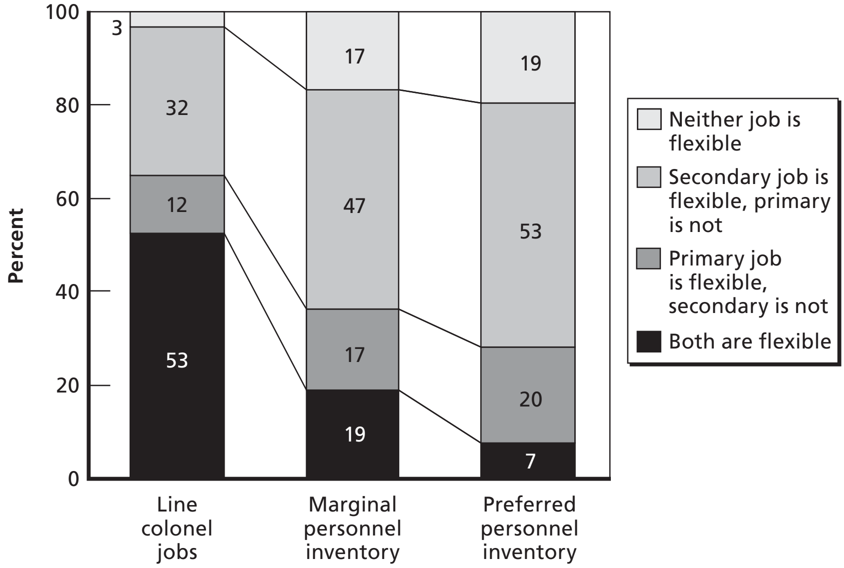
- *Sequencing.* Some jobs are appropriate as first jobs for colonels and some as second jobs, but some need senior colonels.
- *Occupational pyramids.* Some skill pairings are needed for senior jobs only, for example.

- *Preparatory roles.* Some jobs are important for preparing and/or testing colonels as candidates for promotion to general officer.
- *Selectivity.* Several qualified candidates should be available when openings occur, so that a choice of good candidates can be offered for the selection process.
- *Progression.* Nominal continuation rates and job tenures affect availability for selection in future openings.
- *Outflows.* The colonel force must yield enough competitive candidates with the skill pairings needed to feed into and sustain the general officer force.

Users can guide the new model by targeting minimum levels of selectivity (the number of candidates from whom one can choose when filling a position vacancy), how precisely the jobs' experience designations must be met, and how many more general officer candidates must be made available than can actually become general officers, for example. The model identifies flows that would minimize the number of incoming colonels with paired skills, maximize flexibility in the occupational mix of new colonels, maximize its congruity with a targeted mix of primary occupations, and maximize similarity in the fractions of incoming cohorts from different occupations who would possess paired skills.

RAND ran the model with the skill-pairing requirements that the expert panels had identified for fiscal year 2002's line colonel jobs (i.e., excluding the medical, legal, and chaplain corps). Figure 1 illustrates the results. The bar on the left shows the amount of flexibility in the job requirements, subdivided into jobs that require specific primary and secondary skills (3 percent), jobs that require a specific primary skill and allow flexibility in the secondary skill (32 percent), jobs that require a specific secondary skill and allow flexibility in the primary skill (12 percent), and those that allow flexibility in both the primary and secondary skills (53 percent). The two personnel inventory bars on the right reflect two variations on the policy goals for the actual inventory to meet the job requirements. The middle bar is a "looser" specification, providing marginally acceptable flows; the right-hand bar is

**Figure 1**
**Flow Analysis Reduces but Does Not Eliminate Flexibility**



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"tighter," providing preferable flows. The case labeled "marginal personnel inventory" seeks at least two qualified candidates per opening and would fill at least half of the jobs that require them with senior-level colonels, for example, while the case labeled "Preferred personnel inventory" seeks at least three qualified candidates per opening and would fill at least 90 percent of the jobs that require them with senior-level colonels. The higher the selectivity target and the more nearly the experience and other policy targets must be met, the less flexibility remains in the targeted personnel inventory.

Table 2 illustrates how the amount of flexibility in the inventory of colonels decreases as the colonels better match the skills required for their jobs. Fifty-one of the fiscal year 2002 positions could accept colonels with either fighter or bomber backgrounds as the primary occupation. In the marginal case, the model recommended using fighter colonels for 56 percent of those positions and bomber colonels for 13 percent; the remaining 31 percent could be either fighter or bomber

**Table 2**
**Inventories Recommended for Jobs Accepting Either Fighter or Bomber Experience as the Primary Occupation (percent)**

| Primary Occupation | Marginal Case | Preferred Case |
|---|---|---|
| Fighter | 56 | 73 |
| Bomber | 13 | 26 |
| Flexible | 31 | 1 |

colonels. In the preferred case, it recommended using fighter colonels for 73 percent and bomber colonels for 26 percent of the inventory, leaving only 1 percent of the inventory flexible to accept either fighter or bomber colonels. As noted above, these numbers reflect the demands of sequencing, occupational pyramids, preparatory roles, selectivity, progression, and outflows.

The analysis also revealed reduced flexibility among secondary occupations. Table 3 matches the modeled inventory against the 50

**Table 3**
**Inventories Recommended for Jobs That Require Intelligence as the Primary Occupation and Are Flexible About the Secondary Occupation (percent)**

| Secondary Occupation | Marginal Case | Preferred Case |
|---|---|---|
| Education and training | 3 | 23 |
| Plans and programs | 0 | 20 |
| Space and missile operations | 10 | 19 |
| Foreign area specialist | 5 | 15 |
| Aerospace power employment | 0 | 9 |
| Other | 2 | 13 |
| Flexible | 80 | 0 |

NOTE: Numbers are rounded and may not add to 100.

fiscal year 2002 colonel positions that required intelligence as the primary occupation and that were flexible about the secondary occupation (part of the category of jobs shown second from the top in Figure 1). The flow analysis found it necessary to fill those positions 20 percent of the time using colonels with specific paired occupations—such as education and training, plans and programs, space and missile operations, and foreign area specialist—in the marginal case, and 100 percent of the time in the preferred case.

Finally, flow analysis shows that *far more officers than jobs need paired skills.* Based on the analysis described above, 23 percent of colonel positions required paired skills; to fill those positions, 31 percent of incoming colonels need paired skills in the marginal case and 58 percent in the preferred case. Table 4 illustrates this pattern for several groups of career fields. For example, while the experts said that only about 29 percent of fiscal year 2002's colonel positions that needed acquisition and finance officers also needed paired skills, flow analysis found that at least 38 percent of new colonels from acquisition and finance should have acquired paired skills in the marginal case and 68 percent in the preferred case.

**Table 4**
**Far More Officers Than Positions Need Paired Skills (percent)**

| Occupational Group | Proportion of Fiscal Year 2002's Positions Needing Paired Skills | New Colonels Needing Paired Skills | |
|---|---|---|---|
| | | Marginal Case | Preferred Case |
| Rated | 21 | 24 | 53 |
| Nonrated operations | 48 | 62 | 93 |
| Logistics | 11 | 37 | 56 |
| Support and special investigators | 7 | 21 | 36 |
| Acquisition and finance | 29 | 38 | 68 |
| More than one group | 28 | | |
| Total | 23 | 31 | 58 |

## Using Analytic Results to Target Skill Pairings

The Air Force has begun to use results from the analytic approach described above. When it became clear in 2005 that the new survey could not authoritatively update the skill requirements for the colonel positions soon enough, the Air Staff and AFPC directed a team of their analysts to work with RAND and use flow analysis and the requirements identified in 2002 to recommend skill-pairing targets that the development teams could consider as guidance for the fall meetings on vectoring. The group met several times to explore and understand the methodology, examined alternative assumptions and priorities that affect its calculations, and tried different ways of organizing and packaging its results.[12] Figure 2 illustrates targets for the mobility career field (airlift and tanker pilots and navigators in the mobility Air Force). It shows the minimum percentage of new mobility colonels who should have a particular paired skill, expressed as a range from marginal to preferable. Such visual displays help development teams make vectoring decisions that should result in better inflows of qualified colonels.

It is worth knowing that, as the executive agent for the FMDC, Lt. Gen. Roger Brady, the Air Force Deputy Chief of Staff for Manpower and Personnel (AF/A1) asked several functional managers to appoint members to an FMDC skill-pairing working group to critically review those results and recommend ways to improve them before distributing them more widely and authoritatively for development teams' implementation. Some working group members questioned a few of the pairings but usually were satisfied when they were able to trace targets back to the jobs that justified them. The greatest concerns arose because (a) some colonel jobs had been eliminated and others created since 2002; (b) a few position's required skill pairings were questionable; and (c) post-modeling allocations of remaining flexibility created a few

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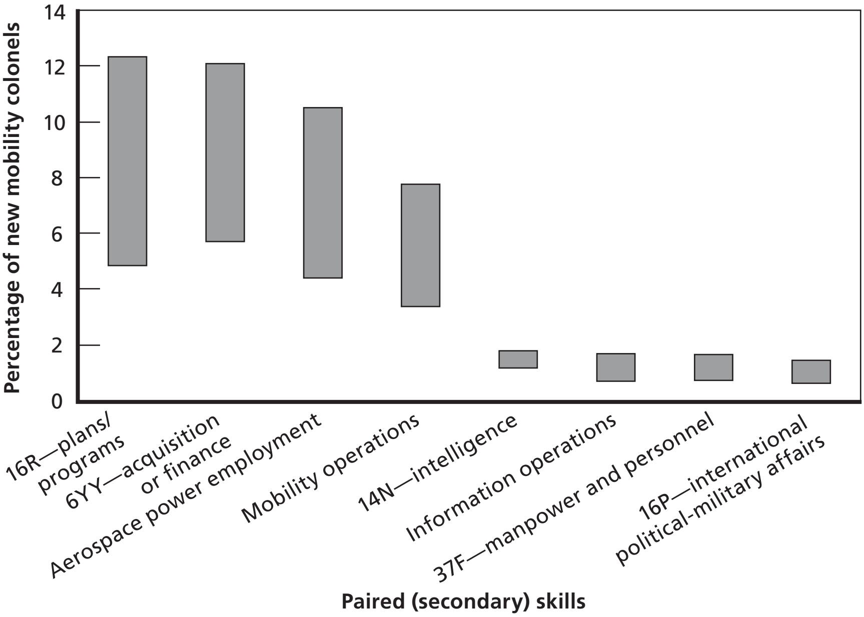
[12] The analysts judged it important to convey the skill-pairing targets as ranges, not as precise, definitive percentages. As Figure 3 suggests, each range represents a floor. Selectivity will be higher and good person-to-job matches will be more likely if more officers develop each paired skill. The closer the result is to the high end of each range (or even beyond the high end), the better for those purposes. On the other hand, it is inappropriate to go much higher if developing a paired skill displaces the development of important depth and expertise within an officer's primary career field.

**Figure 2**
**Skill Pairing Targets for the Mobility Force**



NOTE: Overall, at Least 21 percent (and preferably at least 51 percent) of new mobility Air Force colonels should have a paired skill.

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rather arbitrary skill pairings. With the understanding that career-field managers and development teams may need to alter some of the allocations and even some of the position requirements that underlie the analysis, the working group concluded that the recommended targets offered useful vectoring guidance.

In October 2005, most managers of line career fields received skill-pairing targets from this analysis, just in time for development teams to assess, revise, and use them in the fall round of vectoring meetings. Until then, most development teams had only recommended individuals for schools or had given them organizational vectors, such as "Air Staff," "Major Command headquarters," "Joint," or "Needs of the Air Force" to help guide upcoming assignments. Those aspects of vectoring continue, but the development teams are now using vectoring to guide officers into paired skills. Under the long-term schedule, the teams' spring and fall meetings will issue skill-pairing vectors.

Moving forward, it is important that development teams, assignment teams, and individual officers regard skill vectors as long-term guidance, not necessarily to be realized on the very next assignment. *The aim is to ensure that enough officers have the targeted skill pairs when they become colonels.* AFPC has designed ways to track (1) each development team's progress in vectoring enough officers toward each skill pairing and (2) its own progress in blending those vectors into officers' assignment sequences so that each career fields' cohorts develop enough people with the targeted skill pairings. It is also important for officers in the middle and lower grades to understand that *a paired skill is not essential to one's eventual promotion to colonel.* Many colonel jobs do not require paired skills, and nominal continuation rates can provide enough qualified candidates.

The analytic approach described here should give development teams, career-field managers, and AFPC the guidance they need to develop pools of candidates who are well qualified for senior positions. Inevitably and desirably, the targets will change somewhat as the senior positions evolve, their skill requirements change, planning methods improve, cohorts vary, etc.

## Setting Force-Development Goals for Individual Career Fields

Force-development planners' concentration to date on skill pairings has aimed to improve the development of senior personnel: first of general officers and now colonels on the military side, and first SES positions and then GS-15 positions on the civilian side. If these represent institutional, Air Force–wide developmental needs, there is an even larger question of how to develop personnel for the far more numerous leadership and staff roles at intermediate levels, where they substantially plan, direct, and support activities that fall mainly within their own career fields and contribute critical Air Force and joint capabilities. It takes information much more fine-grained than broad occupation-pairing or skill-pairing targets in order to plan the development of officers for jobs at the grades of major (O-4), lieutenant colonel (O-5), and colonel (O-6). Including colonel positions when planning both institutional, forcewide development and development for career fields' midlevel jobs should foster planning consistency and compatibility, even though different functional managers oversee the various career fields.

Because acceptable skill-pairing targets were lacking until recently, development teams naturally gravitated toward developing officers for success within their own career fields. While many criteria have not been formalized,[13] officers inevitably form impressions of successful career paths by observing their predecessors. Also, existing career-path guidance sketches nominal progression through organizational levels, education, and grades, as is illustrated in Figure 3 for aircraft maintenance officers.

Even though few development teams had provided officers with vectors for paired skills until the fall of 2005, most apparently perceived great value in meeting regularly to systematically assess and guide officers in the middle grades about desirable career vectors. The development teams began the important processes of reviewing officers' records, preferences, and career potential and recommending organizational and educational vectors to guide individuals' professional development. As noted, until quantitative goals for skill pairing emerged, the development teams understandably concentrated on individual officers.

RAND developed and demonstrated a four-step approach that the Air Force can use to establish well-justified targets for entire career fields. This approach grew out of work for the Air Force Space Command that assessed the assignment and utilization of space and missile operations officers (the 13S specialty) and the career field's sustainability (Vernez et al., 2006). Since completing the project in 2003, RAND

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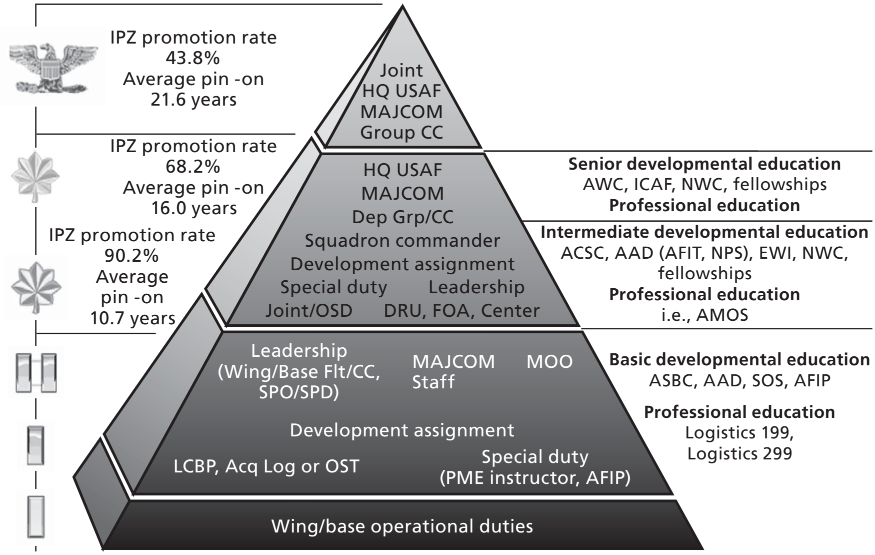
[13] Some career fields have more-definitive requirements than others, of course. For example, the rated career fields have formal "gate" and currency programs requiring fairly regular accumulation of flying experience, and the Defense Acquisition Workforce Improvement Act requires systematic, progressive qualification and certification for many positions in the acquisition career fields.

**Figure 3**
**Aircraft Maintenance Careers**


IPZ promotion rate
43.8%
Average pin -on
21.6 years
IPZ promotion rate
68.2%
Average pin -on
16.0 years
IPZ promotion rate
90.2%
Average
pin -on
10.7 years
Joint
HQ USAF
MAJCOM
Group CC
HQ USAF
MAJCOM
Dep Grp/CC
Squadron commander
Development assignment
Special duty
Leadership
Joint/OSD
DRU, FOA, Center
Leadership
(Wing/Base Flt/CC, SPO/SPD)
MAJCOM
Staff
MOO
Development assignment
LCBP, Acq Log or OST
Special duty
(PME instructor, AFIP)
Wing/base operational duties
Senior developmental education
AWC, ICAF, NWC, fellowships
Professional education
Intermediate developmental education
ACSC, AAD (AFIT, NPS), EWI, NWC, fellowships
Professional education
i.e., AMOS
Basic developmental education
ASBC, AAD, SOS, AFIP
Professional education
Logistics 199,
Logistics 299

SOURCE: Air Force Personnel Center, "21A Aircraft Maintenance: Career Pyramid," Fall 2005. Online at http://ask.afpc.randolph.af.mil/main_content.asp?prods3=247&prods2=244&prods1=1&cats1=141&p_cats=141&p_faqid=6022 (Officer Force Development, Career Planning Diagrams & Utilization Charts, Non-Rated Ops) (as of August 18, 2006).

NOTES: The items listed inside the pyramid reflect categories of jobs that a maintenance officer may expect to hold at each stage of his career. The list on the right reflects developmental and professional education scheduled for each career phase. The list on the left reflects pay grades, nominal promotion rates, and the timing of each grade change, along with the corresponding insignia earned for each phase. From the bottom, the phases and associated pay grades are second lieutenant (O-1), first lieutenant (O-2), captain (O-3), major (O-4), lieutenant colonel (O-5), and colonel (O-6).

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has undertaken parallel research addressing the rated and intelligence officer forces. Because only the research on the space and missile officer force is complete, the following description of the four steps uses illustrations from the 13S career field.

### Step 1: Identify the Demand

This step draws judgments from experts, primarily colonels, about the importance of dozens of elements of background as preparation for different jobs or groups of jobs in the career field. Experts rate each prior experience, education, and training element as follows:

- **Critical:** *Absolutely essential* to effective performance of the job. Without this experience, the position holder could not perform the job.
- **Important:** *Helpful, but not essential* to effective performance of the job. Without this experience, the position holder could still perform the job, although it would be considerably more difficult and time-consuming.
- **Useful:** *Good, but not necessary* to perform the job. Without this experience the position holder could perform the job but with occasional difficulty.
- **Not relevant:** This background is rarely or never helpful to an officer in this job.

In the 13S career field, experts rated an average of 5.0 (out of 70) elements as critical or important for O-4 jobs, 6.2 for O-5 jobs, and 10.4 for O-6 jobs.[14] Table 5 shows the shares of about 1,100 jobs at grades O-4 through O-6 for which the experts said some of the backgrounds were critical or important. For example, they rated prior functional experience in plans and programs as critical or important for

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[14] Assembling this information about the jobs' demands for prior background involved four principal steps: (1) officers at the Air Force Space Command and the Air Staff identified elements of experience, education, and training that may be needed for one or more positions; (2) working separately, about 50 experts identified and prioritized prerequisite elements for the roughly 10 to 30 jobs under their purviews; (3) assignment officers at AFPC provided similar information for about one-third of the jobs not characterized in number (2); and (4) a team of eight 13S colonels met for two days and carefully reviewed and refined the prerequisites and priorities. In subsequent, parallel work that addressed rated and intelligence jobs, it was more efficient to simply convene concentrated, multiday workshops in which experts identified and prioritized the experience, education, and training needed for specific groups of jobs and discussed potential future changes.

**Table 5**
**Proportion of Jobs Requiring Prior Experience and Education for Space and Missile Operations Officers**
**(percent)**

| Prior Background Needed (examples) | O-4 | O-5 | O-6 |
|---|---|---|---|
| Mission operations experience | | | |
| Satellite command and control | 13 | 11 | 20 |
| Missile crew | 25 | 17 | 20 |
| Special experience | | | |
| Squadron operations officer | 2 | 22 | 31 |
| Contingency and war planner | 10 | 10 | 20 |
| Standards and evaluation examiner | 30 | 29 | 34 |
| Functional experience | | | |
| Plans and programs | 18 | 24 | 43 |
| Acquisition | 10 | 19 | 29 |
| Organizational experience | | | |
| Wing level | 20 | 21 | 41 |
| Headquarters Air Force Space Command | 20 | 42 | 64 |
| National Reconnaissance Office | 10 | 15 | 20 |
| Command experience | | | |
| Squadron | 3 | 11 | 64 |
| Group | N.A. | 1 | 36 |
| Education and training | | | |
| Engineering degree | 8 | 5 | 16 |
| Must hold authorized grade | 55 | 64 | 83 |

NOTE: N.A. = not applicable.

18 percent of the 13S O-4 jobs, 24 percent of the O-5 jobs, and 43 percent of the O-6 jobs.

Looking to the future of this career field, RAND systematically estimated how demand would change (1) if prior experience in both acquisition and warfighting functions and organizations were important for all commander jobs and (2) if space systems were "weaponized" and some support activities were civilianized.

### Step 2: Assess the Supply

This step carefully reviews officers' personnel records to discover which elements of experience, education, and training they have acquired. For example, considering the same 70 elements that may be needed for 13S O-4, O-5, and O-6 jobs, we found that 13S lieutenants had acquired an average of 1.9 elements, captains 4.8, majors 8.6, lieutenant colonels 11.0, and colonels 13.5. This step can also identify the career paths followed by current and past officers and whether retention and promotion patterns vary among different groups of officers.

### Step 3: Compare Supply with Demand (Gap Analysis)

This step ascertains whether enough officers at each grade have each element of experience, education, and training needed. Do they have them in the right combinations? Did they bring the backgrounds needed for their current jobs?

For the 13S career field, although enough officers at each grade usually had each element of background and each combination of elements, gaps were often wide between an officer's background and the prior experience, education, and training needed for his or her job. These gaps are illustrated in the bars marked "actual" in Figure 4, which portray the average (over the jobs at each grade) number of experience categories (a) required for the job but not present in the incumbent, (b) required for the job and possessed by the incumbent, and (c) possessed by the incumbent but not required for the job. About half of a job's needs were not met, on average. Notably, for about 90 percent of the jobs above O-3 that needed an officer with certain experience, the jobholder lacked one or more of the needed types of experience. Moreover, about two-thirds of the assigned officer's accumulated background elements were not needed for the job, on average. Many assignments apparently had been made with insufficient regard for the job's needs and the officer's background.[15]

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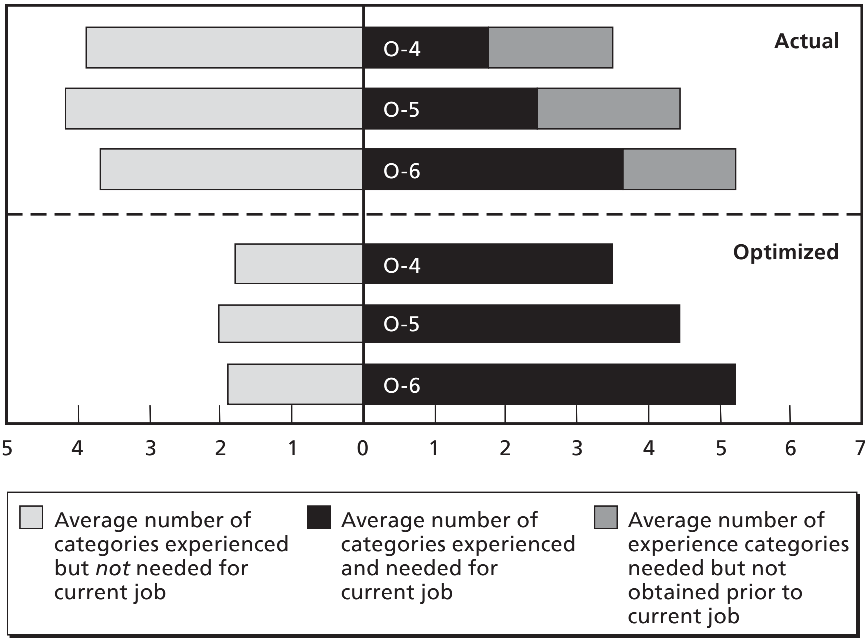
[15] Actual assignments fall short of optimized results for understandable reasons—e.g., compared with the data assembled for our research, assignment teams have less complete, less consistent data about officers' backgrounds and jobs' needs; cohort sizes and assignment

**Figure 4**
**Optimized Development and Utilization Patterns Provide a Better Match Between the Needs of Positions and the Prior Experience of Candidates**



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## Step 4: Plan Ways to Improve the Match Between Supply and Demand

What career paths would efficiently and systematically give enough officers the experience, education, and training needed for each group of jobs? How many officers should acquire different targeted mixes of backgrounds by each career point? Where should one look for officers with the background needed for a particular job and who would benefit from the experience the job gives? Having accumulated a given

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guidance change over time; openings must be filled using only the officers available during an assignment cycle (many fewer than the full inventory); many "by-name" requests must be filled regardless of the job's or the officer's specific needs; and quantitative goals are lacking for using and developing officers' backgrounds. The force-development initiative aims to help assignment teams better see and meet jobs' and officers' needs.

combination of experience, education, and training, which kinds of jobs would best come next? RAND's work on space and missile officers shows how analysis can address such questions by modeling officers' sequences of assignments.

An initial model for the 13S force represented up to 13 career stages, from second lieutenant through colonel, with one to three jobs per grade. It recommended ways to develop and employ successive cohorts (the officers who enter the occupation in a year's time), matching jobs and (modeled) officers in ways that would best meet the jobs' demands and achieve policy-oriented objectives such as maximizing the depth or breadth of experience, establishing as many officers as possible on a "career track" by a certain point in their careers (distinguishing space, missile, and acquisition tracks), and preserving equal opportunity for advancement to higher grades. It awarded points each time an officer brought experience regarded as critical, important, or useful for his or her new job. To limit the model's size, staff at the Air Force Space Command consolidated most of the backgrounds considered in the demand, supply, and gap analyses into 12 broader categories of experience.

The bars marked "optimized" in Figure 4 illustrate the potential benefits of optimizing officers' career paths. Whereas the actual officers analyzed scored only 63 percent (based on the mismatches between backgrounds and requirements described under Step 3 above), the optimized flows would achieve 99.5 percent of the perfect score and would leave only a few majors lacking just one of their jobs' targeted types of experience. Aiming for depth of experience, the optimized flows also would drastically reduce the number of types of experience that would go unused in officers' current jobs (shown on the left), roughly doubling the utilization of prior experience (shown in the dark bars on the right). Largely similar results emerged when we sought breadth instead of depth or considered possible future changes in some jobs' needs for experience or changes in the number and mix of future jobs.

As noted, RAND is conducting similar research for the rated and intelligence forces. Anticipating practicality and improved efficiency for subsequent adaptations, we believe that *development teams have the ideal scope and membership to guide such steps for their career* *fields,* assisted by Air Force manpower and personnel analysts. It will be straightforward to synchronize these steps with the skill pairings targeted for future senior leaders. Improvements in existing manpower and personnel data systems could facilitate such systematic development planning and then management. For example, the Military Personnel Data System has data fields (unused to date) that could hold information about jobs' demands for prior experience, education, or training and about officers' corresponding backgrounds, but computer programming and some conceptual design work are needed to enable their use. With these improvements and a model like the one described here, development teams and Air Force analysts should be able to establish well-justified targets for their individual career fields and guide the development of officers with the right match of skills for their jobs.

## Next Steps for Force Development

The Air Force expects to advance force development in the coming years, greatly improving the development and utilization of highly qualified officers for senior positions and within each career field. The approaches outlined in this monograph can help the Air Force achieve these goals, but further steps remain, especially in the three areas described below.

### Evaluating and Measuring Progress

Evaluation mechanisms and measures should be developed and applied to track force development's progress and effectiveness, addressing both skill pairing and development within a career field. At first, it will be useful to track

- development teams' progress in issuing developmental vectors, consistent with identified goals (especially skill-pairing goals for each specialty), and progress in establishing objectives for development within a career field
- assignment teams' success in directing officers into jobs consistent with their developmental vectors

- cohorts' evolution toward meeting career field–wide goals.

Additionally, the evaluation of selection and promotion processes is especially important for force development's success. Even if the development teams issue developmental vectors in proper mixes and the assignment process eventually places people in corresponding positions, the system will fail if people who are deliberately developed for leadership jobs and for promotion are not later selected for such advancement. Consequently, *we recommend assessment measures that track the mixes of people who are promoted to each grade, serve in command jobs, attend developmental education courses in residence, and hold other key assignments.* Do they come from the appropriate career fields? Are their paired skills consistent with established targets? Does a cohort's mix of backgrounds come closer to targets as it progresses? If too few people who are deliberately developed for advancement are selected, it means either that the wrong people have been developed or that the selection process has not valued their development adequately.

The Air Force also should see better matches between jobs' needs and incumbents' prior backgrounds. It seems practical to measure and monitor the match for the relatively smaller forces in the higher grades and the fewer paired skills at first, expanding later to monitor lower grades and consider other types of background—e.g., experience in mission operations, functional areas, organizations, and command. To enable the latter, more-extensive assessments, it probably will be cost-effective to tap the Military Personnel Data System's latent capacity. *Consistent mechanisms are needed for*

- recording jobs' needs for prior experience, education, and training[16]

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[16] Personnel requisitions, submitted online and maintained at AFPC, often contain such information, but they are neither consistent nor are they presented in a manner that allows broad summaries (e.g., how many jobs require a specific element of experience, education, or training?); they do not help identify good candidates (e.g., via comparing jobs' needs with members' backgrounds); nor do they support performance assessments (e.g., how well assignees' prior qualifications match jobs' needs, overall).

- tracking individual members' accumulating portfolios of experience, education, and training
- helping commanders and mentors recommend assignments and assignment teams make assignments whose demands members meet, that are consistent with targeted developmental patterns, and that match members' preferences, insofar as possible.

Concrete improvements are needed in all three areas.

### Improving Force Planning and Management

Force development proceeds within the context of force management, where broader numbers are key: How large should each specialty be? How many people are needed at each grade or skill level? What is the appropriate mix of active, reserve, and guard personnel? What is the appropriate mix of military and civilian personnel? What retention, promotion, training, cross-training, and separation programs are needed to maintain appropriate strengths?

RAND has proposed ways of improving force planning and management over the years, addressing both within-component[17] and cross-component[18] planning aspects. The FMDC could offer new and important oversight of such management, perhaps via rejuvenating the Air Force's Total Force Career Field Review, which deliberately concentrated on higher levels of force management. By component, type, grade, and skill level, it compared each career field's assigned personnel with required and authorized manpower and revealed differences across career fields. With such information, the FMDC could prioritize some specialties over others for recruiting, training, cross-training, retention, or contracting resources, for example.

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[17] See, for example, Galway et al. (2005); Schiefer et al. (2006); Moore (1981); and Gotz and McCall (1984).

[18] See, for example, Robbert, Williams, and Cook (1999); Moore et al. (1996); Palmer and Rydell (1991); Gotz et al. (1990); and Rostker et al. (1992).

## Extending the Scope of Force Development

Nearly from the beginning of the force-development initiative, Air Force leaders anticipated extending it beyond active-duty officers to include the reserve components, civilians, and enlisted personnel. Important initial work has been done in all three areas. Surveys have identified the experience, education, and training needed for several groups of positions:

- civilian jobs in the SES
- general officer jobs in the Air Force Reserve
- chief master sergeant jobs in the active component.

Subsequent analysis of retention, promotion, and utilization has helped identify developmental goals for the SES and chief master sergeant forces. As noted earlier, AFSLMO launched a survey in 2005 to identify the backgrounds needed for civilian GS-15 jobs and to develop more-complete information and update the corresponding data for active-duty O-6 jobs. Some functional managers (e.g., for logistics and acquisition) have begun the first step in the four-step process outlined above for establishing development targets within each career field. The Air Force Space Command has moved ahead vigorously with its Space Professional Development Program, which includes civilians, enlisted personnel, and Air Force specialty codes beyond 13S, establishing what it calls "space professional experience codes" and levels of professional certification to undergird the program. (See Space Professional Development, 2006.) But much remains to be done, both in the areas remaining and in those already covered:

- Most career fields could benefit from some version of the four-step approach outlined above, targeting the number of members who should develop given profiles of experiences, education, and training by given points in their careers.
- Similar comprehensive approaches should be developed and applied for the civilian, enlisted, and reserve forces.

## Conclusion

Officer force development is especially critical because, unlike most organizations, the Air Force cannot hire its military leaders from outside; they must be grown continually from a junior officer force. Consequently, the Air Force must identify and update the requirements for its leaders at all levels and develop officers to meet them. The force-development initiative can create more systematic, deliberate, measurable processes for targeting and achieving future officer forces that can be even more highly efficient and effective than today's. We recommend that the Air Staff revise AFI 36-2640, Volume 1 (U.S. Air Force, 2004) to be more specific about these processes and that the FMDC take a strong hand in shaping them, supporting their development and implementation, assessing their results, and making and advocating decisions to improve the coordinated development and sustainment of the Air Force's officer force.

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